

Space Nutrition



Volume 2

Down to Earth Research

Issue #9



Earth Research

When doing research to understand the effects of spaceflight on the human body, we always try to conduct experiments on the ground before flying them to make sure they will work. Even then it may not be possible to fly the experiment in space, because some of the equipment or methods of collecting data cannot be flown (for example, they might be too big or take too much time).

Curiosity Corner



From Freeport, TX -
What planets have we visited?

The Earth is the only true planet with a human presence. NASA has flown humans to the Moon – a satellite of the Earth – several times in the late 1960s and early 1970s. In fact, an American flag still flies on the lunar surface. We have sent probes to Mars and hope one day to have humans visit the “red planet”.

Send your questions to:

Space Nutrition Newsletter
Nutritional Biochemistry Laboratory
Mail Code SK3
NASA - Johnson Space Center
Houston, TX 77058

Space research often depends on analogs (or simulated weightlessness) to test how research subjects adapt to microgravity. These subjects are usually not astronauts, but are about the same age, and also in good health. In some cases, the subjects aren't even human, as many studies involve rats or other animals.

The Nutritional Biochemistry Laboratory is very excited about participating in an upcoming study which will use a very unique analog – an underwater habitat! In June 2003, 6 people (including 3 astronauts and 1 person from the Life Sciences group here at NASA) will be living in a capsule 60 feet underwater off the coast of the Florida Keys! The capsule is the size of a typical International Space Station module (approximately 14 meters long and a diameter of 4 meters). The mission will last 14 days, and the crew will eat real space food. We will be studying the crews' nutrition before, during, and after the mission.



The underwater project is called NEEMO – for NASA Extreme Environment Mission Operations. This is the fifth NEEMO project or NEEMO V. The NEEMO acronym was designed to be close to Nemo, the name of the submarine captain from Jules Verne's book *20,000 Leagues Under the Sea*.

The Commander for the NEEMO V mission is Peggy Whitson. You may remember Peggy, as she was the Expedition 5 astronaut on the International Space Station last year. Five must be Peggy's lucky number!

Did you know?

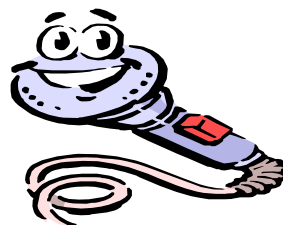
- Bed rest is our most common spaceflight analog. Subjects volunteer to participate in studies that may require them to stay in bed for days, weeks, or sometimes even months! Everything – eating, reading, going to the bathroom, even showering – is done while lying flat or with the head lower than the level of the feet.
- Bed rest subjects lose bone and muscle, very similar to what happens during spaceflight. This allows us to test ways to stop the bone and muscle loss of spaceflight, without having to fly to space.
- We are part of a study where subjects are exercising during bed rest to test whether this stops bone and muscle loss. Once the study is finished we will publish the results in a scientific journal. The first part of the publication will be the abstract or summary of the research study and its findings.



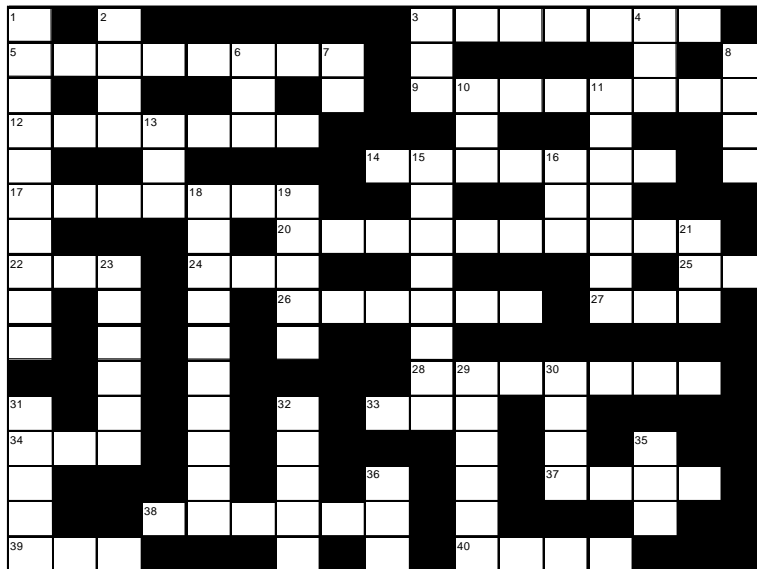
Word of the Month

Humane

Can you guess what this word means? Look for the meaning of the "Word of the Month" in the next issue of Space Nutrition



FUN CORNER



Across

- 3 Land of Columbus
- 5 _____ anthem
- 9 STS-107 Shuttle
- 12 Prior
- 14 Spaceflight analog
- 17 Peggy _____
- 20 Journey with a specific objective
- 22 Dark, oily, viscous material
- 24 Meals ready to eat
- 25 _____ Lu
- 26 Astronauts lose bone and _____ during spaceflight
- 27 Immediate
- 28 Space _____
- 33 Low Earth Orbit
- 34 Extra-vehicular activity
- 37 Red planet
- 38 Space simulation or _____
- 39 Total number of Expedition 7 astronauts
- 40 Direction of sunrise

Down

- 1 Submarine
- 2 Celestial body
- 3 Ames Research Center
- 4 Close of business
- 6 Not to exceed
- 7 Hawaiian-born astronaut
- 8 US space agency
- 10 Aged
- 11 Space _____ or quest
- 13 Batch or many
- 15 Physical activity
- 16 Astronauts _____ foods similar to those on Earth
- 18 Model
- 19 Underwater habitat project
- 21 Brand _____ or _____ moon
- 23 US space partner
- 29 Taste buds are on your _____
- 30 Group working for common goal
- 31 Cardiac
- 32 Not fresh
- 35 Cathode ray tube
- 36 We are living in the space _____

Check out these cool NASA links for more fun space science facts!

<http://spaceflight.nasa.gov/station/aquanastronauts.html>
<http://www.nasa.gov/audience/forkids/index.html>
<http://virtualastronaut.jsc.nasa.gov>

Check out our new look!

<http://haco.jsc.nasa.gov/biomedical/nutrition/>

Look for more information about nutrition and space on the Nutritional Biochemistry Laboratory's Website.

